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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,611	10/20/2005	Jesper Samuelsson	8722.007.USD000	8174
77176	7590	04/28/2009		
Novak, Druce & Quigg LLP 1300 I Street, N.W. Suite 1000, West Tower WASHINGTON, DC 20005			EXAMINER KEYS, ROSALYND ANN	
			ART UNIT 1621	PAPER NUMBER
			MAIL DATE 04/28/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/549,611

**Applicant(s)**

SAMUELSSON ET AL.

**Examiner**

Rosalynd Keys

**Art Unit**

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-37, 40, 41 and 43-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-37, 40, 41 and 43-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 31-52 are pending.  
Claims 31-37, 40, 41 and 43-51 are rejected.  
Claims 1-30, 38, 39, 42 and 52 are canceled.

### ***Response to Arguments***

#### **Claim Rejections - 35 USC § 103**

2. Applicant's arguments with respect to claims 1-30 under 35 U.S.C. 103(a) as being unpatentable over Roach et al. (US 2,585,035) in view of Hoover (US 1,934,309) and Scott (US 2,183,847) and further in view of Arundale et al. (US 2,421,862) have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 31-37, 40, 41 and 43-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roach et al. (US 2,585,035) in view of Hoover (US 1,934,309) and Scott (US 2,183,847) and further in view of Burger et al. (US 3,290,388) and Arundale et al. (US 2,421,862).

Roach et al. inherently teach a process for the production of an allyl and/or methallyl ether of a cyclic formal of a polyhydric alcohol wherein said process comprises the claimed steps i) (see entire disclosure, in particular column 2, lines 30-55; column 4, line 55 to column 6, line 38; the examples and claims 1-10, 16-24, and 26). The Examiner believes that the instant step i) is inherently taught by Roach et al. because during the normal course of operation of the process of Roach et al. a cyclic formal compound is formed during the preparation of the polyhydric alcohol and said cyclic formal is allylated to yield a allyl and/or methallyl ether of said cyclic formal. The claimed cyclic formal starting material is a by-product produced during the synthesis of

the polyhydric alcohol of Roach et al. by reaction between the polyhydric alcohol and aldehyde during the condensation (see Roach, in particular column 5, line 70 to column 6, line 11). See also Hoover, in particular column 1, lines 6-9 and Scott, in particular page 2, left column, lines 22-47, wherein it is taught that cyclic formals are formed during the condensation of polyhydric alcohols. Roach teach that both the condensation and the etherification with the unsaturated halide may be carried out in the same reaction vessel without isolating the polyhydric compound (see column 5, lines 52-55). Thus, the cyclic formal is present during the etherification step and will also come into contact with the halide. A suitable temperature includes a temperature of 70-110°C, although lower or higher temperatures may be used (see column 5, lines 1-6). The unsaturated ether product may be further purified via extraction and distillation (see column 5, lines 15-25). Considerable variation in the polyhydroxy compound is possible (see column, lines 18-60). Thus, the use of the claimed cyclic formals is inherently taught or suggested. The basic catalyst includes a strong caustic solution such as 50% NaOH or basic substance of similar nature (see column 4, line 69 to column 5, line 1).

Roach et al. fail to teach step ii, therefore Roach et al. fail to teach the temperature at which step ii occurs and fail to teach the use of the claimed organic acid catalysts during step ii.

Burger et al. (US 3,290,388) teach a process wherein allyl ethers of m-dioxanes are prepared by reacting the sodium or potassium salt of the corresponding dioxolanemethanol or dioxanol with an unsaturated halide such as methallyl chloride

(see entire disclosure, in particular column 1, lines 8-43). Following this reaction Burger et al. also disclose a process for the conventional hydrolysis or alcoholysis of the obtained dioxanes in the presence of an acid catalyst to obtain the corresponding ethers (see column 1, lines 51-68). The compounds disclosed by Burger et al. are analogous compounds to those disclosed by Roach et al.

Arundale et al. teach a process wherein cyclic acetals or unsaturated derivatives thereof are converted to the corresponding polyhydric alcohols or unsaturated derivatives thereof by treating said cyclic acetals or unsaturated derivatives thereof with an alcohol in the presence or absence of an organic catalyst, such as toluene sulfonic acid at varying temperatures, in accordance with the reactants used, but ordinarily between 50° and 150°C, and the resultant product is recovered by vacuum distillation (see entire disclosure, in particular column 1, line 30 to column 38; column 3, line 72 to column 4, line 29; column 5, lines 30-59; column 6, line 22 to column 7, line 13).

One having ordinary skill in the art at the time the invention was made would have found it obvious that any unused unsaturated ether of the cyclic formal obtained as by-product in the process of Roach et al. could be further converted to produce more ether, as taught by Burger et al. or Arundale. The skilled artisan would have been motivated to carry out such reaction using a temperature and catalyst shown to be effective for such reactions. Arundale et al. teach that in the presence or absence of a catalyst, at temperatures between 50° and 150°C, a cyclic acetal will react with an alcohol to produce the corresponding polyhydric compound. Arundale et al. teach that the use of a catalyst will increase the reaction rate (see column 2, lines 1-4). The skilled

artisan therefore would be motivated to utilize the temperature range and catalyst, as taught by Arundale et al., since Arundale has shown that such a temperature range is effective for converting a cyclic acetal to the corresponding polyhydric compound and that the use of a catalyst will increase the reaction rate. The claims would have been obvious because "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." KSR International Co. v. Teleflex Inc., 550 U.S. \_\_\_, 82 USPQ2d 1385, 1395-97 (2007). In the instant case the ordinary skilled artisan could have opted to utilize the by-product of the Roach et al. process as starting material to prepare other useful products, as taught by Burger et al. or Arundale rather than to discard it as waste.

***Response to Arguments***

7. Applicant's arguments filed February 11, 2009 have been fully considered but they are not persuasive.

The Applicants argue that formals of polyhydroxycompounds are neither mentioned nor contemplated in Roach et al.

This argument is not persuasive because as discussed in the previous office action Roach inherently prepares cyclic formal compounds when the polyhydroxy alcohols of Roach come into contact with the aldehyde compounds during condensation and etherification. As pointed out in the previous office, it was known in the art that cyclic formals will form when polyhydric alcohols are condensed with formaldehydes in the presence of a basic catalyst (see Hoover, in particular column 1, lines 6-9 and Scott,

in particular page 2, left column, lines 22-47). Thus, as stated in the previous office Roach et al. inherently teach a process for the production of an allyl and/or methallyl ether of the cyclic formal wherein said process comprises the claimed step i) (see entire disclosure, in particular column 2, lines 30-55; column 4, line 55 to column 6, line 38; the examples and claims 1-10, 16-24, and 26). The Examiner believes that the instant invention is inherently taught by Roach et al. because during the normal course of operation of the process of Roach et al. a cyclic formal compound will form and said cyclic formal will also be etherified to yield a allyl and/or methallyl ether of said cyclic formal, which is then reacted with at least one alcohol in the manner as taught by Burger et al. and Arundale yielding the claimed allyl and/or methallyl ethers of a tri or polyhydric alcohol.

The Applicants argue that Hoover and Scott are irrelevant to the present claims.

The Examiner disagrees. As pointed out in the previous office action and again above, both Hoover and Scott teach that it is known that cyclic acetals/formals will form during the condensation of polyhydric alcohols due to reaction of the polyhydric alcohols with the aldehydes.

The Applicants arguments with respect to Burger et al. are not persuasive because although the claims are not directed glycerol and glycerol derivatives the claimed compounds are analogous to those disclosed in Burger et al. and thus the skilled artisan would have a reasonable expectation that the instantly claimed allyl and/or methallyl ethers of cyclic formals will react in a similar manner.



For the above reasons the Examiner believes that the instant invention is prima facie obvious.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is (571)272-0639. The examiner can normally be reached on M & T 5:30 am-7 am & 9:30 am-4:30 pm; W-F 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Sullivan can be reached on 571-272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rosalynd Keys/  
Primary Examiner, Art Unit 1621

April 26, 2009